

ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

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In re
Amendment to the Commission's
Rules Regarding Plans for
Sharing the Costs of Microwave
Relocation

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WT Docket No. 95-157
RM-8643

To: The Commission

DOCKET FILE COPY ORIGINAL

**COMMENTS OF SOUTHERN CALIFORNIA GAS COMPANY
ON NOTICE OF PROPOSED RULE MAKING**

SOUTHERN CALIFORNIA GAS COMPANY

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Summary

Southern California Gas Company ("SoCal") is the nation's largest natural gas distribution utility, providing gas service to approximately 17 million residential, commercial, industrial, utility electric generation, and wholesale customers in a 23,000 square mile service area in central and southern California. SoCal is the licensee of numerous Part 90 Industrial Land Mobile and Part 94 Operational Fixed Microwave Stations, including a substantial number of Part 94 stations licensed in the 1850 to 1990 MHz ("2 GHz") frequency band. SoCal has a direct and substantial interest in this proceeding, which seeks to establish a cost-sharing mechanism for microwave relocation, and to clarify certain aspects of the negotiation process between PCS providers and microwave incumbents.

SoCal generally supports the Commission's proposal for cost sharing between PCS licensees benefiting from microwave relocation. However, the establishment of a cost-sharing mechanism should in no way adversely affect the obligation of PCS licensees to reimburse the full cost of incumbent microwave users relocating to comparable spectrum, including engineering and consulting expenses incurred by incumbents in ensuring they are provided comparable facilities.

The adoption of a reimbursement obligation among PCS licensees benefitting from the relocation of microwave incumbents is consistent with the commitment to provide relocated microwave incumbents comparable facilities and will facilitate the seamless, efficient relocation of microwave incumbents, and therefore benefit the public interest.

SoCal is concerned that the Commission's proposal for a relocation clearinghouse could lead to breaches of confidential information concerning relocation agreements, and therefore recommends limiting the information submitted to such a clearinghouse and prohibiting its release to third parties to ensure the confidentiality of relocation negotiations.

SoCal strongly supports the retention of the 12-month period during which incumbents would verify their provision of comparable facilities, but strongly opposes any revision of the rules which would relegate to secondary status after April 4, 2005, microwave incumbents not relocated by that date. Adoption of this proposal would weaken the obligation of PCS licensees to provide comparable facilities to microwave incumbents and constitute a breach of the Commission's promise to protect microwave incumbents.

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In re)	
)	
Amendment to the Commission's Rules)	WT Docket No. 95-157
Regarding a Plan for Sharing)	RM-8643
the Costs of Microwave Relocation)	

To: The Commission

**COMMENTS OF SOUTHERN CALIFORNIA GAS COMPANY
ON NOTICE OF PROPOSED RULE MAKING**

Southern California Gas Company ("SoCal"), by its attorneys and pursuant to FCC Rule Section 1.415 submits its Comments on the Commission's October 13, 1995 *Notice of Proposed Rule Making*, FCC 95-426 ("*NPRM*") in this proceeding, and shows the following:

1. SoCal is the nation's largest natural gas distribution utility, providing gas service to approximately 17 million residential, commercial, industrial, utility electric generation, and wholesale customers in a 23,000 square mile service area in central and southern California. SoCal is the licensee of numerous Part 90 Industrial Land Mobile and Part 94 Operational Fixed Microwave Stations, including a substantial number of Part 94 stations licensed in the 1850 to 1990 MHz ("2 GHz") frequency band.^{1/} SoCal has been approached concerning the relocation of certain of its existing 2 GHz hops. Accordingly, it has a direct and substantial interest in this proceeding, which seeks to

^{1/} SoCal's various microwave hops form a backbone network, interconnecting more than 61 sites providing emergency and routine voice communications among its employees, as well as a variety of data applications, including peak-load management and automated meter reading service over its vast service area. SoCal communications network is thus an essential vehicle for its continued provision of quality public service.

establish a cost-sharing mechanism for microwave relocation, and to clarify certain aspects of the negotiation process between PCS providers and microwave incumbents.

2. As discussed in more detail below, SoCal generally supports the Commission's proposal for cost sharing between PCS licensees benefiting from microwave relocation. However, the establishment of a cost-sharing mechanism should in no way adversely affect the obligation of PCS licensees to reimburse the full cost of incumbent microwave users relocating to comparable spectrum, including engineering and consulting expenses incurred by incumbents in ensuring they are provided comparable facilities. SoCal, however, does have a concern that the Commission's proposal for a relocation clearinghouse could lead to breaches of confidential information concerning relocation agreements, and therefore recommends limiting the information submitted to such a clearinghouse and prohibiting its release to third parties to ensure the confidentiality of relocation negotiations. Moreover, SoCal strongly supports the retention of the 12-month period during which incumbents would verify their provision of comparable facilities, and strongly opposes any revision of the rules which would relegate to secondary status after April 4, 2005, microwave incumbents not relocated by that date.

I. Mandatory cost sharing between PCS licensees will facilitate rapid and efficient relocation of 2 GHz microwave incumbents.

3. The NPRM proposes a plan for mandatory partial reimbursement of the costs incurred by PCS licensees relocating 2 GHz microwave incumbents to the benefit of other PCS licensees.

Essentially, a relocating PCS licensee would be entitled to reimbursement of up to \$250,000^{2/} of its non-premium expenses to relocate a microwave hop which benefits another PCS licensee. *NPRM* at paras. 25-43. The exact amount of reimbursement would be determined by applying a formula which accounts for the number of PCS licensees benefiting from the relocation and amortizes the cost of relocation over a ten year period.^{3/}

4. SoCal supports the Commission's proposal for mandatory cost sharing. In SoCal's view, piecemeal relocation of microwave facilities would be costly both to the PCS industry and to 2 GHz microwave incumbents, with the public ultimately bearing the increased costs. Subjecting incumbents to negotiations, voluntary or mandatory, with several PCS providers is a needless waste of time and resources. Moreover, at least in SoCal's case, its microwave facilities are part of an integrated network. Effecting modifications to selected links has ramifications to other portions of the network, requiring detailed study and possible modifications of non-relocated links. Thus, piecemeal relocation promises to drive up the costs of relocation to the detriment of PCS providers and their subscribers, as well as to needlessly divert the

^{2/} To the extent an additional tower is required to be constructed, that \$250,000 per link cap would be increased by \$150,000. *NPRM* at para. 43.

^{3/} Where a PCS licensee relocates a link which would not cause it co-channel interference -- either because the link is transmitting outside the PCS licensee's frequency band or because it is located fully outside the PCS licensee's area -- the Commission is proposing full reimbursement up to the limit of the cap, i.e., with no sharing of costs or accounting for amortization. *NPRM* at para. 33.

attention of microwave incumbents' management, serving to increase costs to their customers.

5. The most efficient means of effecting relocation through a single comprehensive plan negotiated between one PCS provider and the incumbent.^{4/} This approach will facilitate a timely and efficient relocation, will minimize the possibility of disputes over relocation, and will facilitate the resolution of any claimed deficiencies in the provision of comparable facilities.^{5/}

6. The NPRM's reimbursement proposal would offer PCS licensees a substantial incentive to effect comprehensive relocation plans by allowing them to recoup relocation costs from other PCS licensees benefiting from relocation. SoCal therefore strongly supports the proposal with the minor modifications and clarifications discussed below.

A. The Commission should decline to impose an artificial cap on the amount of reimbursement per microwave link.

7. SoCal opposes any artificial cap on the amount of reimbursement for microwave relocation. Adoption of a cap would only serve as a disincentive for PCS providers to effect comprehensive relocation of microwave incumbents with no discernible, countervailing public interest benefit. SoCal understands the

^{4/} Indeed, such an approach may provide substantial savings to PCS providers in terms of the achievement of economies of scale internally as well as in contracting equipment acquisition, and design and installation services.

^{5/} A comprehensive plan would eliminate disputes regarding the allocation of responsibility if a problem developed in the provision of comparable facilities. The opportunity for finger-pointing and denial would be substantially limited.

desire to limit PCS licensees' exposure to potentially unlimited liability for relocation, but the FCC proposes to address that concern with the limitation on reimbursement of premium payments. Thus, PCS licensees expected to share reimbursement costs will be liable only for a defined portion of the expenses associated with providing comparable microwave facilities to incumbents, by no means an unlimited amount. Moreover, at least with respect to replacement of links partially benefitting the relocating PCS licensee, the existence of the reimbursement obligation certainly provides no incentive to overcompensate incumbent licensees since the relocating PCS licensee will always pay a greater amount of the cost of relocation under the Commission's formula than any reimbursing PCS licensee due to the amortization component of the formula.^{6/} Thus, there is simply no need for a general cap on microwave relocation reimbursement.^{7/}

^{6/} Only in the case of relocation of links which do not benefit the relocating PCS licensee does a possible lack of incentive exist to minimize relocation costs. In that instance, SoCal does not object to a reasonable limitation on reimbursement, which should be no less than \$300,000 per link, indexed in accordance with the Consumer Price Index from April of 1995.

^{7/} The *NPRM* emphasizes that the reimbursement obligation is wholly separate from the obligation of PCS licensees to provide microwave incumbents with comparable facilities. In that connection, SoCal strongly opposes any proposal which would serve to weaken the requirement that PCS licensees are required to provide microwave incumbents with comparable facilities at no cost. See *infra* at 11-16.

B. The proposed \$250,000 per link reimbursement cap is insufficient to encourage comprehensive relocation of microwave incumbents.

8. Despite the disadvantages of a reimbursement cap discussed above, if the Commission nevertheless were to adopt one, it should be higher than the \$250,000 the *NPRM* proposes. Pacific Bell originally recommended a \$600,000 cap, but subsequently accepted the proposal of the Personal Communications Industry Association ("PCIA") to limit the amount to \$250,000, which the *NPRM* indicates is an approximate average cost of relocating a microwave link. *NPRM* at 43. Basing reimbursement on an average cost basis, however, is inappropriate. It means that in approximately half the cases, the relocating PCS provider will bear a disproportionate amount of the cost of relocation and therefore would be discouraged from effecting a comprehensive relocation of microwave incumbents. A more appropriate cap would be some reasonable percentage above the average cost, to account for the normal variance of the expenses associated with relocation. In SoCal's view, raising the *NPRM*'s proposal from \$250,000 to \$300,000 would be more equitable to relocating PCS licensees.^{8/}

9. SoCal does concur with the Commission's proposal to increase any reimbursement cap by \$150,000 if an additional tower

^{8/} The optimal cap would reimburse those costs within normal a variance, but not expenses far in excess of the norm. Unfortunately, it is not apparent from the text of the *NPRM* whether sufficient data are available to the Commission to properly analyze the degree of variance of microwave relocation costs. In the absence of such data, a cushion sufficient to cover relocation costs that exceed the norm but still are within a zone of reasonableness would be appropriate.

is required. However, SoCal requests the Commission to clarify that the increased cap would be \$150,000 per additional tower.

C. All reasonable relocation costs should be reimbursable, including legal and engineering consulting fees.

10. With respect to the reimbursement of premium payments, SoCal takes no position.^{9/} However, to the extent the Commission determines premium payments not to be reimbursable, it should clarify that premium expenses do not include the reasonable costs incurred by incumbents in negotiating relocation agreements with PCS licensees and in verifying that the facilities are comparable. Many incumbents have no practical alternative but to engage legal and engineering advisors to ensure that facilities defined as comparable by a relocating PCS licensee are indeed functionally equivalent. The incumbent likewise will incur legal and engineering expenses in the preparation, review and filing of the FCC applications for relocation.^{10/} Similarly, once facilities are constructed, the licensee is entitled to independent evaluation to ensure compliance with the comparable facilities requirement and to enforce the terms of any relocation agreement entered into by

^{9/} SoCal believes the failure to reimburse PCS licensees for premium payments will serve to inhibit them from relocating microwave incumbents during the voluntary negotiation period. However, SoCal recognizes the Commission's reluctance to obligate subsequent PCS licensees to reimburse relocating PCS licensees for substantial premium payments.

^{10/} Even if the PCS licensee undertakes to pay the cost of application preparation, the licensee has a non-delegable duty imposed by Section 310(d) of the Communications Act of 1934, as amended, to verify and independently certify the information contained in the application and to control the filing and prosecution of the application. See *Intermountain Microwave*, 24 Rad. Reg. (P&F) 983 (1963).

the parties. Thus, legal and engineering fees are by no means premium expenses as the Commission suggests. See *NPRM* at para. 76.

11. Similarly, no factual or policy predicate supports the *NPRM's* suggestion that expenses of attorneys and consultants hired by incumbents in the case of mandatory relocations are "extraneous" expenses not entitled to reimbursement unless approved in advance by the PCS relocater. The term "extraneous" indicates such expenses are unnecessary. That simply is not accurate for the reasons discussed above. Microwave incumbents have not asked to be relocated. As this proceeding amply demonstrates, the rules concerning relocation are complex and not entirely without ambiguity. Moreover, the Commission expects microwave incumbents to proactively ensure they are provided comparable facilities.^{11/} To suggest in these circumstances that legal and engineering counsel are not essential to the microwave incumbent defies reality.

12. In that respect, it is particularly inappropriate to suggest that such expenses are not compensable unless PCS

^{11/} Indeed, the *NPRM* is contradictory regarding the role of consultants. Although suggesting at para. 76 that consultant fees are "extraneous," the *NPRM* acknowledges at para. 78 that the Commission in the *Emerging Technologies Second Memorandum Opinion and Order*, 9 FCC Rcd 7797, 7801-02 & nn. 43-44 (1994) ("*Second ET Order*"), "strongly urged microwave incumbents to obtain "independent cost estimates," and stated that such estimates should be obtained "early in the negotiation process," that such estimates were expected to be obtained by incumbent licensees for the Commission's consideration in the event of a dispute, that the obtaining of these estimates was the "responsibility" of the incumbent microwave licensees, and that the cost of obtaining such estimates would be recoverable from PCS relocaters. The Commission is now suggesting such costs may be recoverable only if the third party preparing the cost is "acceptable" to the PCS licensee.

relocators agree to the consultants in advance. Such a requirement will effectively destroy the independence of the analysis the consultants provide. It is not difficult to anticipate PCS relocators compiling a list of third party consultants acceptable to them, and "blacklisting" any consultant whose numbers did not please the PCS relocator in a previous negotiation. Microwave incumbents are entitled to independent advice and analysis. To allow PCS relocators to veto an incumbent's choice of an attorney or a consultant merely invites gamesmanship. At most, a limitation that such expenses are reimbursable only to the extent they are reasonable under the circumstances would be appropriate.

D. PCS licensees should be reimbursed for costs incurred in relocating microwave incumbents because of adjacent channel interference.

13. The NPRM proposes at paras. 53-56 that PCS licensees should not be required to reimburse the relocation of microwave incumbents where adjacent channel interference would be occasioned by the subsequent PCS licensee because consideration of adjacent channel interference would be unnecessarily complex. SoCal disagrees. Adjacent channel interference is considered under the Prior Coordination Notice procedures. As such, it may be considered as easily as co-channel interference. Since the Commission proposes -- as it should -- to continue to require PCS licensees to relocate microwave incumbents to avoid adjacent channel, as well as co-channel, interference, subsequent PCS licensee which benefit from these relocations should reimburse relocating PCS licensees for an appropriate portion of those costs.

II. The proposed relocation clearinghouse risks breaches of confidentiality of PCS relocation agreements.

14. The *NPRM* proposes creation of "reimbursement rights" to be tracked by an industry-sponsored clearinghouse.^{12/} PCS licensees seeking reimbursement would submit data to the clearinghouse, including copies of relocation contracts. The clearinghouse would then determine the amount of reimbursable costs to be paid by subsequent licensees pursuant to the rules. Prior Coordination Notices would also be filed with the clearinghouse, which would determine whether operation by the new PCS licensee would have caused interference to a relocated microwave facility. If so, the clearinghouse would advise the new licensee of its reimbursement obligation under the cost-sharing formula. *NPRM* at para. 63.

15. SoCal has concerns regarding the clearinghouse proposal. For the voluntary negotiation process to work appropriately, parties should be entitled to provide that their agreements shall remain confidential. Relocation negotiations may include the provision of additional services by microwave incumbents, such as, microwave carriage, use of rights of way, dark fiber, or site location. The parties will likely wish to keep the details of the provision of such services, as well as specific information relating to premium payments, confidential for competitive reasons. Thus, the requirement that relocation agreements be submitted to an

^{12/} SoCal agrees with the Commission that transfer of so-called "interference rights" is not appropriate in light of Section 310(d)'s prohibition on the transfer of licensed rights without prior FCC consent. See *NPRM* at para. 47. The transfer of reimbursement rights does not run afoul of Section 310(d).

industry-sponsored clearinghouse raises potential confidentiality concerns, unless strict limitations are placed on access to the information contained therein. SoCal proposes that only a summary of the costs of provision of comparable facilities should be provided the clearinghouse, rather than the entire agreement. In addition, to the extent the clearinghouse needed back-up information, the clearinghouse would be placed under a legal requirement to maintain the confidentiality of the details of relocation agreements and to release only the amount of the reimbursement obligation to subsequent PCS licensees.^{13/} Neither the PCS industry, nor other microwave incumbents would be entitled to review such information, ensuring that negotiations between the parties would occur on a level playing field.

III. The Commission should not retreat from the position that microwave incumbents are entitled either to full compensation for relocating to comparable facilities or to retention of interference protection for their current facilities.

16. Certain portions of the NPRM are troublesome because they indicate the Commission may be considering revisiting its position that microwave incumbents are entitled to full reimbursement for relocating to comparable facilities, and that, in the absence of being supplied comparable facilities at no cost, microwave incumbents are entitled to maintain primary status with full interference protection.

^{13/} The clearinghouse would also be required to maintain a bond sufficient to compensate any party damaged as a result of the improper release of confidential information.

A. Microwave incumbents not relocated prior to April 4, 2005 should retain full interference protection.

17. The most disturbing proposal in the *NPRM* would relegate incumbent microwave licensees to secondary status if they have not been relocated by April 4, 2005. *NPRM* at para. 90. This would diminish significantly the protection currently guaranteed to microwave incumbents. FCC Rule Section 94.59(c) provides that the Commission will amend a microwave incumbent's license to secondary status only if a PCS licensee provides the 2 GHz incumbent comparable facilities. This provision therefore places an absolute obligation on PCS providers to relocate or permanently protect microwave incumbents. The *NPRM's* proposal, however, would effectively eliminate this protection. PCS licensees could wait until after April 4, 2005, not relocate microwave incumbents, and then force them off the air, without compensation, by interfering with them or claiming interference from them after that date.

18. There is no sustainable legal or policy rationale for this radical departure from the FCC's carefully crafted, appropriately balanced relocation plan, particularly at this late stage of the process. The only justifications proffered are that the date proposed coincides with the ten-year period after which the clearinghouse will dissolve, and that it provides adequate time for completion of the microwave relocation process. What the *NPRM* fails to consider, however, is that microwave incumbents have absolutely no control over their relocation. They have no legal ability to force PCS providers to relocate them. Rather, it is the PCS providers which have the exclusive right to determine whether

and when to relocate microwave incumbents. Under these circumstances, if the PCS provider does not elect to relocate the incumbent within the ten-year period, the PCS provider must bear the cost of that choice. It is unreasonable to suggest that the microwave incumbent should forfeit its interference protection because the PCS licensee has deliberately sat on its relocation rights.^{14/} The appropriate modification of Rule Section 94.59(c), if any, would require PCS licensees to relocate microwave incumbents by April 4, 2005, or forever forfeit their right to do so.

B. The Commission should not disturb the 12-month period during which licensees may verify they have been provided comparable facilities.

19. The NPRM propose to maintain the rule which allows an incumbent 12 months to determine if replacement facilities are comparable, and which provides that the licensee need not surrender its 2 GHz licenses until the end of this evaluation period. NPRM at paras. 84-85. SoCal supports this affirmation of the one-year testing period. The nature of microwave facilities is that they can be adversely affected by both climate and vegetation. Thus, the only way to fully ensure that comparable facilities have been provided is to allow the operator one full year to test them.

^{14/} As the Commission indicated in the *Second ET Order*, 9 FCC Rcd at 7800 & nn. 28-29, the existing relocation rules were designed to meet Congressional concerns to protect microwave incumbents while allowing PCS providers to relocate incumbents if necessary. Removing protection from incumbents after the ten-year period utterly fails to meet the Congressional concerns that the interests of existing microwave incumbents "must be protected." *Id.*

C. *Proposals to erode the definition of "comparable" should be rejected.*

20. SoCal does not disagree with the Commission's proposed definition of "comparable," to wit: "A replacement facility will be presumed comparable if the new system's communications throughput and reliability are equal to or greater than that of the system to be replaced, and the operating costs of the replacement system are equal to or less than those of the existing system." See *NPRM* at para. 73. SoCal, however, disagrees with the analysis contained at note 126 of the *NPRM* (para. 74) wherein the Commission suggests it would define comparable reliability of the radio link as that equal to the overall reliability of the incumbent system, and would not require the radio link portion of the system to be built to a higher reliability than that of other components of the system.

21. That analysis is based on a misperception of statistical probability.^{15/} The overall reliability figure of a microwave link is not the reliability figure for its least reliable component; it is instead the product of the reliability figure for each component of the system multiplied by each other component's reliability percentage. Pursuant to that formula, unless the reliability of every other component of a microwave system is 100 percent (because any number multiplied by one equals itself), or the reliability of any component is zero percent (because any number multiplied by zero equals zero), the reliability of the system as a whole will always be less than the reliability

^{15/} See Declaration of Thomas G. Adcock, Exhibit I, hereto.

percentage of the radio link, or any other component for that matter.^{16/} Thus, it is fallacious to limit the reliability percentage figure of the radio link to the reliability percentage of any other portion of the system, or to the rest of the overall system. PCS providers should be required to design the replacement radio link to equal or exceed the reliability percentage of the existing link.^{17/}

22. At para. 74 of the *NPRM*, the Commission proposes that PCS licensees should not be responsible for increased operating costs beyond a single ten-year license term. SoCal suggests the appropriate method of accounting for such increased operating expenses is for the relocating PCS licensee to pay the *net present value* of such increased costs, not ten years' worth of those increased costs.^{18/}

^{16/} To correct the Commission's calculation of reliability in footnote 126, if the reliability of all other components in the system equals 99.999 percent, exclusive of the radio link, then factoring in the radio link reliability of 99.9999 percent, results in an overall reliability figure of 99.9989 which is less than 99.999 percent. If the radio link is limited to only 99.999 percent reliability, the actual system reliability will be 99.998, not 99.999, as the *NPRM* mistakenly assumes.

^{17/} In any event, the real point of examination should be the overall reliability of the path being relocated, not that of the individual components. If the path reliability is 99.9999 percent, the replacement path should have the same degree of reliability. There should be sufficient flexibility in the relocation process to adjust the individual components of a system to match or exceed the unrelocated link's reliability.

^{18/} SoCal disagrees with the Commission's proposal to assume the operating costs of microwave systems will not vary if the number of links remain the same. See *NPRM* at para. 74. Actual operating costs for microwave facilities above 2 GHz
(continued...)

23. The *NPRM* addresses at para. 77 the situation where analog equipment may be unavailable to provide comparable relocated facilities for an existing analog system, and inquires whether the PCS licensee should be permitted to compensate the incumbent only for the depreciated cost of the existing analog equipment. The purpose of the comparable facilities requirement is to effect the seamless relocation of facilities at no cost to incumbents. Merely compensating a microwave incumbent for the undepreciated value of equipment rendered obsolete by relocation does not provide that licensee comparable facilities, and clearly would subject the licensee to substantial costs in effecting the implementation of comparable facilities. The Commission should reject any suggestion to diminish incumbent microwave protection in this manner.

IV. Conclusion.

24. The allocation of spectrum to PCS providers was predicated on a Commission commitment to microwave incumbents -- many of whom are publicly regulated utility companies with public service obligations and regulated cost structures -- that they would be relocated to comparable facilities and that their loss of spectrum and forced obsolescence of equipment would be fully

^{18/}(...continued)

are almost always substantially higher than for 2 GHz facilities. For example, although 2 GHz microwave facilities may use foam transmission line, microwave facilities above 2 GHz must use waveguides, which require continuous operation of pumps to assure positive pressure in the waveguide. In addition, training, test equipment, maintenance, and spare parts for higher frequency microwave stations are higher than for 2 GHz microwave facilities. Thus, it is not justified to assume there will be no higher operating expenses per link.

compensated by the relocating PCS operators. The adoption of a reimbursement obligation among PCS licensees benefitting from the relocation of microwave incumbents is consistent with that commitment and will facilitate the seamless, efficient relocation of microwave incumbents, and therefore benefit the public interest.

25. Adoption of any proposal which weakens the obligation of PCS licensees to provide comparable facilities to microwave incumbents, however, would constitute a breach of the Commission's promise to protect microwave incumbents. It ultimately would disserve the public interest by making microwave incumbents bear the cost of relocation for the benefit of PCS providers. SoCal urges the Commission to maintain its current definition of "comparable facilities" and not to retreat from the requirement that PCS licensees must provide comparable facilities at no cost to incumbent 2 GHz microwave licensees.

Respectfully submitted,

SOUTHERN CALIFORNIA GAS COMPANY

By: 

Elizabeth R. Sachs
George L. Lyon, Jr.
Its Attorneys

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November 30, 1995

EXHIBIT I

Affidavit of Thomas G. Adcock

AFFIDAVIT

City of Washington :
: SS
District of Columbia :

I, THOMAS G. ADCOCK, P.E., having been first duly sworn, depose and state as follows:

1. I am a registered Professional Engineer in Washington, D.C. and the Director of Engineering for the firm of Lukas, McGowan, Nace and Gutierrez, Chartered.

2. I graduated from the United States Military Academy at West Point, New York in 1957 with a Bachelor of Science degree, and from the Massachusetts Institute of Technology, Cambridge, Massachusetts in 1963 with a degree of Masters of Science in Electrical Engineering. From 1963 through 1966, I developed and taught advanced electronic engineering courses while serving on the faculty at the United States Military Academy, West Point, New York. In addition, I have completed post-masters degree courses at New York University and George Washington University, and am a Senior Member of the Institute of Electrical and Electronic Engineers.

3. I am familiar with the Federal Communications Commission's ("FCC's") rules including Parts 21 and 94 for point-to-point microwave, and since 1982 have

prepared or supervised the preparation of the technical portions of hundreds of applications, engineering reports, declarations and affidavits filed with the FCC.

4. This affidavit has been prepared on behalf of the Southern California Gas Company. Southern California Gas Company is the licensee for a number of Part 94 point-to-point microwave links.

5. A point-to-point microwave system's reliability is dependent on the reliability of its separate components. The overall reliability is the probability that the system works at or above a threshold defining acceptable performance. This overall probability is composed of the separate probabilities of the system's components.

6. Because the probability of failure of any one system component is considered to be independent of the probability of failure of any other component, the overall system reliability can be calculated as the product of the probabilities of no failure (i.e., reliability) for each of the system's components. Mathematically this can be expressed as $P = p_1 \times p_2 \times p_3 \times \dots$

7. Since each component has some probability of failure, each of these component probabilities will be less than 1. As a result, the overall system reliability will always be less than the probability of reliability (no failure) for any one of the system's components.

8. For example, consider a microwave system with four components, each with a probability of no failure of 0.99999. Then the overall reliability (probability of no failure) for the system would be:

$$P = (.99999) (.99999) (.99999) (.99999) = 0.99996$$

9. If one of these system components, with a reliability of 0.99999, was replaced with a component having not a 0.99999 reliability, but a reliability of 0.99996, i.e., a reliability corresponding to the former overall system reliability, then the resulting probability of no reliability for the system would be only:

$$P = (.99996) (.99999) (.99999) (.99999) = 0.99993$$

10. This means that before the component change, the system would expect to see 21.0 minutes of outage per year as compared to 36.8 minutes of annual outage after the lower reliability component was substituted into the system. Clearly, the change would significantly reduce the overall system's reliability.

11. The foregoing statements of fact are true and correct to my personal knowledge.


THOMAS G. ADCOCK, P.E.

Subscribed to and sworn to before me
this 29th day of November, 1995.


Notary Public

My commission expires:

R. LOREN BRADON
NOTARY PUBLIC DISTRICT OF COLUMBIA
My Commission Expires October 31, 1997

